

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of : **Confirmation No. 6783**
Hiroshi Kawasaki et al. : Attorney Docket No. 2004_1479A
Serial No. 10/507,929 : Group Art Unit 1616
Filed September 17, 2004 : Examiner Danielle D. Sullivan
HERBICIDE COMPOSITION AND : **Mail Stop: AMENDMENT**
WEED-CONTROLLING METHOD
USING THE SAME

DECLARATION UNDER 37 CFR 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, **Ryo Hanai**, the undersigned, a citizen of Japan, residing at **Shizuoka, Japan** do hereby declare:

That I am an employee of KUMIAI CHEMICAL INDUSTRY CO., LTD., Japan, the assignee of the above-identified United States patent application, since April, 1987, being engaged in the research and development works relative to herbicide compositions and other related products of the company;

THAT although I am not named as one of the joint inventors in the above-identified pending United States patent application, I have full acquaintance with the subject matter of the above-identified pending application as being a successor of the named inventors Messrs. Kawasaki and Miyazawa;

THAT I have a good knowledge of the English and Japanese languages and have read and understood the application papers and the prosecution history of the application as well as the Examiner's references cited in the official actions; and

THAT I have caused the comparative experiments described below either by myself or under my direct supervision on behalf of the inventors, with an object to demonstrate the unexpectedly great advantages obtained with the herbicide compositions formulated with component (A), i.e. pyrimisulfan, and component (B), which is compound (1), i.e. fentrazamide, in the mass ratio as specified in claim 1 of the above-identified pending patent application.

COMPARATIVE EXPERIMENTS

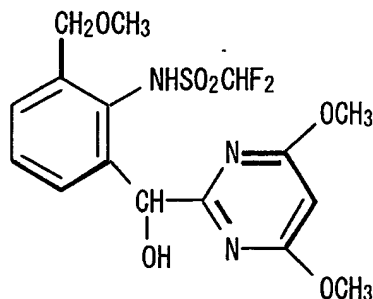
I. Object of experiments

While claim 1 of the above-identified patent application requires that pyrimisulfan and fentrazamide should be combined in the mass ratio of 1:1-1:15, the object of the following experiments is to demonstrate the significance of this feature on the combination with this ratio as a characteristic parameter having great influences on the performance of the herbicide composition.

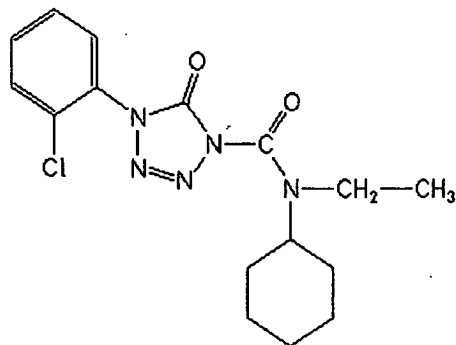
II. Experimental procedures

(1) Formulation of wettable powder (hydrated agent) agent

A wettable powder was prepared by blending 10 parts of active ingredient (A), i.e. pyrimisulfan, represented by the formula,



or active ingredient (B), i.e. fentrazamide, represented by the formula,



with 0.5 part by mass of polyoxyethylene octylphenyl ether, 0.5 part by mass of β -naphthalene-sulfonic acid-formalin condensate sodium salt, 20 parts by mass of diatomaceous earth and 69 parts by mass of clay and pulverizing the blend thus obtained. The wettable powder was then diluted with water to give an agent of the wettable powder containing the active ingredient with a dosage shown in Table 2. In case of No. 7-10, two kinds of the wettable powders were diluted with water together to give an agent of the wettable powders containing the active ingredients each with a dosage shown in Table 2.

(2) Evaluation tests on weed-controlling effect and degree of chemical damage

A 100 cm² wide plastic pot was filled with a paddy field soil and, after watering and shuffling, seeds of each of early watergrass (Ec), heartshape false pickerelweed (Mo) and rock's bulrush (Sc) were sowed in a depth of 0.5 cm followed by pooling of water in a depth of 3 cm. Thereafter, a paddy rice plant (Or) at the two-leaf stage was transplanted in a transplanting depth of 2 cm. The next day, an agent of the wettable powder(s) was applied on the water surface of the plastic pot which was kept in the greenhouse. After 21 days, the weed-controlling effects of the agent and the degrees of chemical damages to the plants were evaluated according to the criteria as given in Table 1. The results are shown in Table 2. For comparison, each of the expected values according to the Colby formula is shown in the bracket on Table 2.

Table 1

Index	Weed-controlling effect and degrees of chemical damages (Growth inhibition degree in portions above soil level)
10	95% or higher growth inhibition
9	not less than 85% but less than 95% growth inhibition
8	not less than 75% but less than 85% growth inhibition
7	not less than 65% but less than 75% growth inhibition
6	not less than 55% but less than 65% growth inhibition
5	not less than 45% but less than 55% growth inhibition
4	not less than 35% but less than 45% growth inhibition
3	not less than 25% but less than 35% growth inhibition
2	not less than 15% but less than 25% growth inhibition
1	not less than 5% but less than 15% growth inhibition
0	less than 5% growth inhibition

Table 2

No.	Active ingredient	Dosage (g/10 are)	Weed-controlling effect			Chemical damages
			Ec	Mo	Sc	
1	None	-	0	0	0	0
2	(A)	0.1	3	3	2	0
3	(B)	1.5	8	7	4	0
4		1.0	5	4	2	0
5		0.6	3	2	2	0
6		0.1	0	0	0	0
7	(A) + (B)	0.1+1.5	10 (8.6)	10 (7.9)	10 (5.2)	0
8		0.1+1.0	10 (6.5)	10 (5.8)	9 (3.6)	0
9		0.1+0.6	8 (5.1)	9 (4.4)	9 (3.6)	0
10		0.1+0.1	5 (3.0)	7 (3.0)	5 (2.0)	0

III. Conclusion

In Experiments 7-10, the respective expected values according to the Colby formula demonstrate that the results obtained by the claimed composition are unexpected.

Even in Experiment 10 wherein dosages of the active ingredients (A) and (B) were only 0.1 g each per 10 are, weed-controlling effects against all of the three weeds could be achieved. The synergistic effects greatly exceeded the expected values.

As is clearly understood from above, great and unexpected synergistic effects can be obtained in the weed-controlling effects using the inventive herbicide composition which is formulated with pyrimisulfan and fentrazamide in the claimed range of mass ratio.

I hereby declare that all statements made herein of my own knowledge are true, and that all statements on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Date: November 16, 2009

Ryo Hanai
Ryo HANAI